

*The role of the avian nesting curve in enzootic West Nile virus transmission*

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**Abstract:** *West Nile virus* (WNV) is a vector-borne disease primarily spread between birds and mosquitoes. While seasonal WNV outbreaks have been widely observed to be associated with the end of the avian nesting season, the ecological mechanisms determining this synchronicity are poorly understood. Newly hatched birds, or nestlings, have less feather coverage and fewer defense mechanisms than older birds, rendering them more vulnerable to mosquitoes. Vector biting rates may depend on the age structure of the avian population, which changes throughout the year as nestlings hatch and subsequently age into fledglings and adults. We investigate how changes in the relative abundance of host stages may structure enzootic WNV transmission with a mathematical model incorporating avian (host) stage-structure and stage-specific mosquito (vector) biting rates. We explore the relationship between properties of the avian nesting curve and the timing and magnitude of WNV outbreaks.